AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended)   A method ~~Method~~ of measuring dose distribution in a phantom for radiation therapy treatment verification, wherein at least two detector planes are arranged in said phantom in a non-parallel manner, each plane being provided with a plurality of diode detectors, wherein said phantom is irradiated using a patient specific treatment, comprising: ~~the steps of~~

obtaining information regarding the dose distribution inside said phantom by performing measurements using said detectors;

dividing the measurements in time-intervals, each time-interval having maximum length of approximately 100 msec; and

using said information in the treatment verification.

2. (currently amended)   ~~Method~~ A method according to claim 1, wherein the information obtained by ~~means of~~ said measurements is used for IMRT verification.

3. (currently amended) ~~Method~~ A method according to claim 1, wherein said irradiation of the phantom comprises delivering dose pulses, the method further comprising ~~the step of~~ synchronizing the measurements with said delivered doses.

4. (currently amended) ~~Method~~ A method according to claim 1, further comprising ~~the steps of~~: synchronizing the measurements with a respiratory cycle of the patient for which the patent specific treatment is intended; and determining the dose delivered in the various phases of the

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respiratory cycle.

5. (currently amended) ~~Method~~ A method according to claim 1, further comprising the step of storing the data for each specific time-interval for measurements in said phantom.

6. (currently amended) ~~Method~~ A method according to claim 1, further comprising the step of calculating a correction factor ~~factors~~ for each detector element for each time-interval using said obtained information regarding the dose distribution inside said phantom.

7. (currently amended) ~~Method~~ A method according to claim 6, wherein ~~the~~ each correction factor $Corr_{n, f, seg-n, f, p, t(i), t(i+1)}$ is ~~factors are~~ calculated according to:

~~Corr n, f, seg-n, p, t(i), t(i+1) = Cdir*Cdepth*Cpos~~$Corr_{n, f, seg-n, f, p, t(i), t(i+1)} = C_{dir} * C_{depth} * C_{pos}$,

where:

~~where~~

~~Corr n, f, seg-n, p, t(i), t(i+1) The~~$Corr_{n, f, seg-n, f, p, t(i), t(i+1)}$ is the correction factor to be used with detector element n, in the sub field f in the phantom, correcting the measured dose integrated from time t(i) until t(i+ 1) to achieve the dose in the point of location of detector n,

~~Cdir Factor~~C_{dir} is a factor correcting for any directional dependence in detector n,

~~Cdepth Factor~~C_{depth} is a factor correcting for any depth (energy and/or dose rate) in detector n, and

~~Cpos Factor~~C_{pos} is a factor correcting for ~~any~~ position ~~(in primary beam, outside primary beam, edge of primary beam, etc.)~~ dependency in detector n.

8. (original) ~~Method~~ A method according to claim 6, wherein ~~the correction factors are~~ each

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correction factor $\text{Corr}_{n, f, \text{seg-n}, f, p, t(i), t(i+1)}$ is calculated according to:

~~Corr n, f, seg-n, p, t(i), t(i+1) = Cdir + Cdepth + Cpos~~$\underline{\text{Corr}_{n, f, \text{seg-n}, f, p, t(i), t(i+1)} = C_{dir} * C_{depth} * C_{pos}}$,

~~Where~~where:

~~Corr, f, seg-n, p, t(i), t(i+1)~~$\underline{\text{Corr}_{n, f, \text{seg-n}, f, p, t(i), t(i+1)}}$ ~~The~~ is the correction factor to be used with

detector element n, in the sub field f in the phantom, correcting the measured dose integrated

from time t(i) until t(i+ 1) to achieve the dose in the point of location of detector n,

~~Cdir~~$\underline{C_{dir}}$ ~~Factor~~ is a factor correcting for any directional dependence in detector n,

~~Cdepth~~$\underline{C_{depth}}$ ~~Factor~~ is a factor correcting for any depth (energy and/or dose rate) in detector n,

and

~~Cpos~~$\underline{C_{pos}}$ ~~Factor~~ is a factor correcting for ~~any~~ position ~~(in primary beam, outside primary~~

~~beam, edge of primary beam, etc.)~~ dependency in detector n.

9. (currently amended) ~~Method~~ A method according to claim 1, wherein the detector planes are

arranged such that for each ~~gantry~~ angle projection of a radiation beam used to irradiate said

phantom, either of said non-parallel planes intersects with all parts of the radiation beam ~~or sub-~~

~~beams.~~

10. (currently amended) ~~Method~~ A method according to claim 1, wherein each detector plane is

provided with detectors having a thickness in a range less than ~~the~~ a range of ~~the~~ electrons in a

radiation beam used to irradiate said phantom ~~of the maximum energy in the range~~ where ~~the~~

energy dependency is significant.

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11. (currently amended) A method ~~Method~~ of measuring dose distribution in a phantom for

radiation therapy treatment verification, wherein detector planes are arranged in said phantom,

each plane being provided with a plurality of diode detectors, wherein said phantom is irradiated

using a patient specific treatment, comprising: ~~the steps of~~

obtaining information regarding the dose distribution inside said phantom by

performing measurements using said detectors;

dividing the measurements in time-intervals, each time-interval having a maximum

length of approximately 100 msec;

synchronizing the measurements with a respiratory cycle of ~~the~~ a patient for which

the ~~patent~~ patient specific treatment is intended;

determining the dose delivered in the various phases of the respiratory cycle; and

using said information in the treatment verification.

12. (currently amended)   ~~Method~~ A method according to claim 11, wherein at least two

detector planes are arranged in said phantom in a non-parallel manner.

Claim 13. (cancelled)

14. (currently amended) ~~Use of a~~ A detector configuration for use in the method according to

claim 1, where the detector configuration is arranged in a phantom suitable for radiation therapy

~~in a method according to claim 1, said configuration comprising~~ in and comprises at least two

detector planes provided with a plurality of diode detectors for measuring irradiation in said

phantom, said irradiation being delivered using a patient specific treatment, wherein said planes

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being arranged in a non-parallel manner, wherein said detectors has a thickness <u>less than 500 μm.</u> ~~in a range less than the range of the electrons of the maximum energy in the range where the~~ ~~dependency is significant.~~

15. (currently amended)   Detector configuration according to claim 14, wherein said <u>detectors have a thickness of less than 200 μm.</u> ~~non-parallel planes are arranged such that, for~~ ~~each gantry angel projection, either of said planes intersects with all parts of the radiation beam~~ ~~or sub-beams.~~

16. (cancelled.

17. (currently amended)   Diode detector according to claim ~~16~~<u>1</u>, wherein said detector is used in water phantom dosimetry or in vivo dosimetry during Brachy therapy in Radio therapy.

18. (currently amended) ~~Computer~~ <u>A computer-</u>readable medium <u>embodied in a tangible</u> <u>medium</u> comprising instructions <u>which when implemented by a computer, cause the</u> ~~for bringing~~ ~~a~~ computer to perform the steps of the method according to claim 1.

19. (new)   An apparatus for measuring dose distribution in a phantom for radiation therapy treatment verification where said phantom is irradiated using a patient specific treatment, comprising:

at least two detector planes arranged in said phantom in a non-parallel manner, each plane being provided with a plurality of diode detectors, and

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electronic circuitry configured to:

obtain information regarding the dose distribution inside said phantom by performing measurements using said detectors;

divide the measurements in time-intervals, each time-interval having maximum length of approximately 100 msec; and

use said information in the treatment verification.

20. (new) The apparatus in claim 19, wherein irradiation of the phantom comprises delivered dose pulses, and wherein the electronic circuitry is configured to synchronize the measurements with said delivered doses.

21. (new) The apparatus in claim 19, wherein the electronic circuitry is configured to:

synchronize the measurements with a respiratory cycle of the patient for which the patent specific treatment is intended, and

determine the dose delivered in the various phases of the respiratory cycle.

22. (new) The apparatus in claim 19, wherein the electronic circuitry is configured to calculate a correction factor for each detector element for each time-interval using said obtained information regarding the dose distribution inside said phantom.

23. (new) The apparatus in claim 22, wherein the electronic circuitry is configured to calculate each correction factor $Corr_{n, f, seg-n, f, p, t(i), t(i+1)}$ according to:

$$Corr_{n, f, seg-n, f, p, t(i), t(i+1)} = C_{dir} * C_{depth} * C_{pos}, \text{ where:}$$

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$Corr_{n, f, seg-n, f, p, t(i), t(i+1)}$ is the correction factor to be used with detector element n, in the sub field

f in the phantom, correcting the measured dose integrated from time t(i) until t(i+ 1) to achieve

the dose in the point of location of detector n,

C_{dir} is a factor correcting for any directional dependence in detector n,

C_{depth} is a factor correcting for any depth (energy and/or dose rate) in detector n, and

C_{pos} is a factor correcting for position dependency in detector n.

24. (new) The apparatus in claim 22, wherein the electronic circuitry is configured to calculate

each correction factor $Corr_{n, f, seg-n, f, p, t(i), t(i+1)}$ is calculated according to:

$Corr_{n, f, seg-n, f, p, t(i), t(i+1)} = C_{dir} * C_{depth} * C_{pos}$, where:

$Corr_{n, f, seg-n, f, p, t(i), t(i+1)}$ is the correction factor to be used with detector element n, in the sub field

f in the phantom, correcting the measured dose integrated from time t(i) until t(i+ 1) to achieve

the dose in the point of location of detector n,

C_{dir} is a factor correcting for any directional dependence in detector n,

C_{depth} is a factor correcting for any depth (energy and/or dose rate) in detector n, and

C_{pos} is a factor correcting for position dependency in detector n.

25. (new) The apparatus in claim 19, wherein the detector planes are arranged such that for each

angle projection of a radiation beam used to irradiate said phantom, either of said non-parallel

planes intersects with all parts of the radiation beam.

26. (new) An apparatus for measuring dose distribution in a phantom for radiation therapy

treatment verification, wherein detector planes are arranged in said phantom, each plane being

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provided with a plurality of diode detectors, wherein said phantom is irradiated using a patient specific treatment, comprising:

means for obtaining information regarding the dose distribution inside said phantom by performing measurements using said detectors;

means for dividing the measurements in time-intervals, each time-interval having a maximum length of approximately 100 msec;

means for synchronizing the measurements with a respiratory cycle of a patient for which the patient specific treatment is intended;

means for determining the dose delivered in the various phases of the respiratory cycle; and

means for using said information in the treatment verification.

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